
Direct Air Support Center Handbook



U.S. Marine Corps

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FOREWORD

The Marine air command and control system (MACCS) provides the Marine aviation combat element (ACE) commander with the means to exercise control of those organic and nonorganic aviation assets necessary to support Marine air-ground task force (MAGTF) operations. Marine Corps Warfighting Publication (MCWP) 3-25, *Control of Aircraft and Missiles*, addresses basic planning considerations for MACCS operations, employment, and interoperability among MACCS and joint service agencies.

MCWP 3-25.5, *Direct Air Support Center Handbook*, complements and expands on the information in the MCWP 3-25 by focusing on the details of direct air support center (DASC) operations and the role the DASC plays in integrated MAGTF operations. Written for MAGTF, naval expeditionary force, and joint force commanders and staffs, MCWP 3-25.5 highlights DASC organization, equipment, planning considerations, operational fundamentals, and employment options.

By investigating these areas, MCWP 3-25.5 provides the requisite information needed by commanders and staffs to understand and evaluate the operational principles and capabilities of various DASC employment options.

This publication is a revision of MCWP 3-25.5 dated
16 September 1996.

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT
OF THE MARINE CORPS

/s/

EDWARD HANLON, JR.
Lieutenant General, U.S. Marine Corps
Commanding General
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Direct Air Support Center Handbook

Table of Contents

Chapter 1. Fundamentals

Role	1-1
Tasks	1-2
DASC Organization	1-3
Officer in Charge	1-3
Staff Noncommissioned Officer in Charge	1-4
Senior Watch Officer	1-5
Senior Air Director	1-5
Crew Chief	1-6
Technical Air Director	1-6
Helicopter Director	1-7
Air Support Net Operators	1-8
Air Support Plotters	1-9
Communications-Electronics Maintenance Coordinator	1-10

Chapter 2. System Description

AN/TSQ-207 Communications Air Support Central	2-1
Communications Distribution	2-2
System Configuration	2-2

AN/UYQ-3A Mobile Direct Air Support	
Center (Airborne)	2-3
Operator Positions	2-4
Communications	2-4
Situation Displays	2-4
AN/MRC-145/138 and Man-Portable Radios	2-5
Mobile Electric Power	2-5
Capabilities	2-5
Flexibility	2-6
Mobility	2-6
Echelon Capability	2-6
Limitations	2-6
Procedural Control	2-7
Line-of-Sight Communications	2-7
Electronic Signature	2-7
Equipment Upgrades and Replacements	2-7

Chapter 3. Planning

Initial	3-1
Intelligence	3-3
Site Selection	3-4
Specific Air Support	3-5
Electronic Warfare	3-6
External Support	3-8

Chapter 4. Operations

Employment Options	4-1
DASC	4-1
DASC(A)	4-1
ASE	4-2
ASLT	4-3
Concept of Employment	4-3
MEF	4-4
MEB	4-5
MEU	4-7
Interagency Relationships	4-8
DASC/TACC	4-8
DASC/FSCC	4-10
DASC/Anti-air Warfare (AAW) Agencies	4-12
DASC/TAC(A)	4-13
DASC/ASC(A)	4-13
DASC/TACP/Forward Air Controller (FAC)/FAC(A)	4-14
DASC/UAV	4-14
DASC/Medical Regulation Team (MRT)	4-15
DASC/Rear Area Operations Center (RAOC)	4-15
DASC in Amphibious Operations	4-16
Phasing Ashore	4-16
Responsibility	4-16
ATF Supporting Arms Agencies	4-17
Transfer of Control and Coordination of Supporting Arms	4-17

DASC in Joint/Multinational Operations	4-19
Joint Operations	4-20
Multinational Operations	4-21
Special Considerations	4-21
Procedural Control of Direct Air Support Aircraft	4-22
DASC Siting Considerations	4-23
Proximity to the FSCC	4-23
Communications	4-24
Security	4-24
Mobility	4-25
Future Employment	4-25
DASC Configuration	4-25
DASC(A)	4-26
ASE	4-26

Appendices

A Crew Briefing Guide/Format	A-1
B Training	B-1
C Glossary	C-1
D References and Related Publications	D-1

Chapter 1

Fundamentals

The direct air support center (DASC) is the principal Marine air command and control system (MACCS) air control agency responsible for the direction of air operations directly supporting ground forces. It functions in a decentralized mode of operation, but is directly supervised by the Marine tactical air command center (Marine TACC) or the Navy tactical air control center (Navy TACC). During amphibious or expeditionary operations, the DASC is normally the first MACCS agency ashore and usually lands in the same category (i.e., scheduled or on-call wave) as the ground combat element's (GCE's) senior fire support coordination center. The DASC's parent unit is the Marine air support squadron (MASS) of the Marine air control group (MACG).

Role

The DASC processes immediate air support requests; coordinates aircraft employment with other supporting arms; manages terminal control assets supporting GCE and combat service support element forces; and controls assigned aircraft, unmanned aerial vehicles (UAVs), and itinerant aircraft transiting through DASC controlled airspace. The DASC controls and directs air support activities that affect the GCE commander's focus on close operations and those air missions requiring integration with the ground combat forces (close air support [CAS], assault support, and designated air reconnaissance). The DASC does not normally control aircraft conducting deep air support (DAS) missions as detailed coordination of DAS missions are not required

with ground forces. However, the DASC will provide battle damage assessments (BDAs) and mission reports (MISREPs) from DAS missions to the GCE's senior fire support coordination center (FSCC) and TACC when required.

Tasks

The DASC—

- Receives the air tasking order (ATO) from the TACC (Marine or Navy) and coordinates preplanned direct air support.
- Receives, processes, and coordinates requests for immediate direct air support.
- Adjusts preplanned schedules, diverts airborne assets, and launches aircraft as necessary when delegated authority by the aviation combat element (ACE) commander and in coordination with the Marine air-ground task force (MAGTF) force fires coordination center (FFCC) or GCE senior FSCC.
- Coordinates the execution of direct air support missions with other supporting arms through the appropriate FFCC/FSCC and, as required, with the appropriate MACCS agencies.
- Receives and disseminates pertinent tactical information reported by aircraft performing direct air support missions.
- Provides aircraft and air control agencies with advisory and threat information to assist in the safe conduct of flight.
- Monitors, records, and displays information on direct air support missions.
- Maintains friendly and enemy ground situation displays necessary to coordinate direct air support operations.

- Provides direct air support aircraft and other MACCS agencies with information concerning the friendly and enemy situation.
- Refers unresolved conflicts in supporting arms to the FFCC/FSCC fire support coordinator (FSC).

DASC Organization

The DASC crew is task-organized to meet operational requirements. Crewmembers are assigned positions based on their level of qualification and experience. Figure 1-1 on page 1-4 shows a notional DASC organization. Appendix A is a crew briefing guide/format. Appendix B discusses training (individual, crew, unit, and evaluation).

Officer in Charge

The DASC officer in charge (OIC) is a commissioned officer not normally assigned to a crew as a watch stander. The DASC OIC is designated by the MASS commanding officer for a specific operation and is responsible for the following:

- Embarkation and logistics.
- Conduct of DASC operations.
- Configuration of the DASC communications.
- Coordinating with joint, multinational, and other external agencies as required.
- Evaluating and supervising training for the DASC crew.

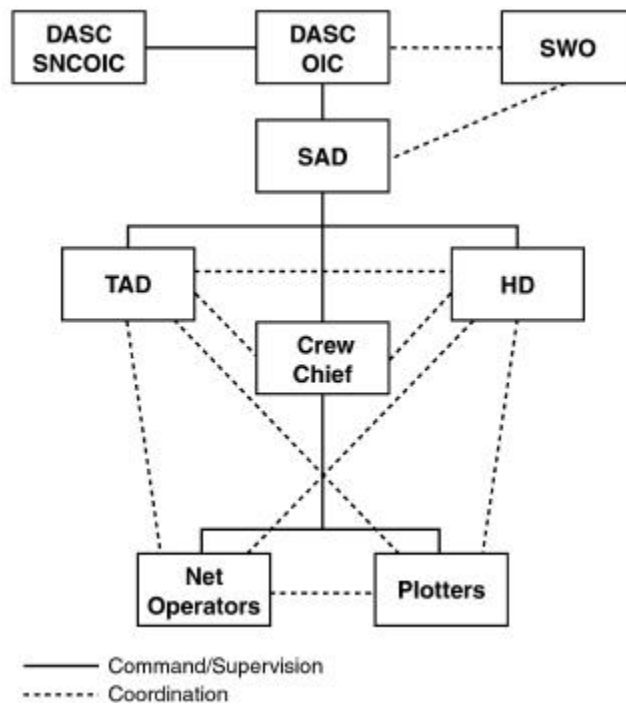


Figure 1-1. Notional DASC Organization.

Staff Noncommissioned Officer in Charge

The DASC staff noncommissioned officer in charge (SNCOIC) is not normally assigned to a crew as a watch stander. The DASC SNCOIC responsibilities include the following:

- Assisting the DASC OIC as required.
- Coordinating the DASC's embarkation and logistics.
- Evaluating and supervising training for enlisted crewmembers.
- Accounting for personnel assigned to the detachment.

Senior Watch Officer

The senior watch officer (SWO) is normally a senior officer who is not assigned as a crewmember, but who is responsible to the commanding officer for the following:

- Assisting in coordination with joint, multinational, and other external agencies.
- Providing situation briefings and coordinating the future efforts of DASC operations.
- Evaluating, supervising, and assisting in training DASC crewmembers.

Senior Air Director

The senior air director (SAD) is the commissioned officer who is the most qualified DASC watch stander. The SAD is responsible for the following:

- Functioning of the DASC crew on watch.
- Ensuring intelligence information received by the DASC is disseminated to appropriate air control, air defense, and supporting arms elements.
- Receiving, disseminating, and posting fire support information in the DASC.
- Coordinating with fire support agencies to ensure deconfliction between aircraft and supporting arms is accomplished.
- Coordinating the efforts of DASC liaison teams and airborne extensions of the DASC as required.
- Coordinating with agencies external to DASC.
- Directing DASC communications restoration priorities and the upkeep of DASC communications status.
- Maintaining a log of significant events that occur during the crew's watch.

- Ensuring the logs of the tactical air director (TAD), helicopter director (HD), and crew chief are complete, reviewed for clarity, and properly signed in and out.
- Assigning appropriate aircraft to immediate air support requests.

Crew Chief

The DASC crew chief, normally a staff noncommissioned officer or noncommissioned officer and the most qualified enlisted watch stander, is responsible to the SAD for the following:

- Timely and accurate display of tactical information.
- Coordinating communications restoration and the upkeep of communications status.
- Maintaining a log of significant events that occur during the crew watch and files containing required forms and records.
- Ensuring the net operators' logbooks are completed, checked for clarity, and properly signed in and out.
- Coordinating DASC-internal information flow.
- Supervising the enlisted members of the crew.

Tactical Air Director

The TAD is responsible to the SAD for the following:

- Coordinating and controlling fixed-wing offensive air support (OAS) aircraft, UAVs, and designated assault support, electronic warfare (EW), and air reconnaissance aircraft.
- Coordinating direct air support missions with fire support assets (e.g., naval surface fire support [NSFS], artillery).
- Briefing aircrew on assigned missions, threat information, and fire support coordination measures.

- Reviewing requests for fixed-wing aircraft and recommending the most efficient use of available assets.
- Maintaining status information on fixed-wing aircraft under the control of the DASC or terminal air controllers.
- Coordinating with the HD to eliminate scheduling or mission assignment conflicts between those missions that involve both fixed- and rotary-wing assets or when more than one mission is conducted in the same area.
- Advising and directing fixed-wing aircraft as to changes in the air defense warning condition and weapons control status.
- Maintaining a log and appropriate records.
- Coordinating with tactical air coordinators (airborne) (TAC[A]) for the control of assigned aircraft.

Helicopter Director

The HD is responsible to the SAD for the following:

- Coordinating and controlling helicopters.
- Coordinating designated rotary-wing missions with fire support assets.
- Briefing aircrew on assigned missions, threat information, and fire support coordination measures.
- Reviewing requests for helicopters and recommending the most efficient use of available rotary-wing assets.
- Maintaining status information on helicopters under control of the DASC or terminal controllers.
- Coordinating with the TAD to eliminate conflicts between fixed-wing missions and helicopter missions.
- Coordinating with the assault support coordinator (airborne) (ASC[A]) for control of assigned aircraft.

- Advising aircrew of the current air defense warning condition and weapons control status and directing helicopter actions specific to the particular air defense alert condition.
- Coordinating with the TAD on helicopter missions conducting CAS.
- Maintaining a log and appropriate records.

Air Support Net Operators

Air support net operators (ASNOs) are usually enlisted personnel who operate the various radio nets within the DASC. They normally include the tactical air request/helicopter request net operator, the direct ASNO, the tactical air traffic control net operator (when required), the fire support coordination net operator, and the tactical air command net operator.

Systems Operated

Various command, control, communications, computers, and intelligence systems are also operated by the ASNOs within the DASC. The systems include the following:

- Theater battle management core system.
- Advanced Field Artillery Tactical Data System.
- MAGTF software base line.
- Intelligence operator workstation.
- Command and control personal computer.

Responsibilities

Some net operator functions may be combined depending on the DASC's task organization. ASNOs are specially trained in air control procedures and terminology. An ASNO's responsibilities include the following:

- Knowing net names, frequencies, and types of communications equipment being used.
- Knowing the call sign, name, and unit location for stations operating on their assigned communications net(s).
- Knowing the type of information expected to be transmitted and received on the net.
- Understanding the forms/records required to record information from or to pass information on the net.
- Understanding the air/ground situation, to include boundaries, control points, and control measures necessary to effectively operate and understand information passed on the net.
- Managing net operations if assigned as a net control station.
- Maintaining a log of significant events that occur during the watch.
- Understanding and executing the correct information flow within the DASC.

Air Support Plotters

Air support plotters are normally enlisted personnel who, under the supervision of the DASC SAD and crew chief, maintain the situation displays within the DASC. They are specially trained in air control procedures, terminology, and symbology. Air support plotters are responsible for the following:

- Plotting information directed by DASC supervisory personnel.
- Receiving, recording, and disseminating information received over the appropriate net(s).

Communications-Electronics Maintenance Coordinator

The communications-electronics (C-E) maintenance coordinator assigned to the crew is responsible for—

- Monitoring communications nets.
- Monitoring the status of the DASC's cryptographic instruments.
- Providing liaison with other C-E Marines operating associated C-E equipment.

Chapter 2

System Description

The DASC may be configured to support a variety of tactical situations. A radio-intensive air control agency, DASC uses manual information displays, procedural control, and voice communications systems to direct and coordinate direct air support activities.

AN/TSQ-207 Communications Air Support Central

The primary DASC communications/operations platform is AN/TSQ-207 communications air support central (CASC). It consists of five identical hardware configurable, lightweight multipurpose shelters (LMS) and associated support equipment (e.g., environmental control units, quick erect tents, antennas, cables, and computer equipment) mounted on high mobility, multipurpose wheeled vehicles (HMMWVs). Each vehicle tows a M116A3 trailer that carries a generator and some combination of cables, antennas, and a tent.

Each shelter provides rack space, antennas, as well as signal and power distribution for the very high frequency (VHF), ultrahigh frequency (UHF), high frequency (HF), telephone, and requisite encryption assets organic to the Marine air support squadron (MASS).

Communications Distribution

The command, control, and communications distribution system is comprised of a system called MESHnet that allows the operator to interface the following items:

- User control device (UCD) allows the operator access to the radios, intercom, and telephone. With the UCD, the operator can monitor four nets at one time and remotely switch crypto devices on and off.
- Network access unit (NAU) is the heart of the MESHnet. It routes traffic among UCDs and interfaces with radios, telephones, and an Ethernet computer network.
- Ethernet interface unit (EIU) connects the Ethernet local area network with the NAU.

System Configuration

The AN/TSQ-207 is preconfigured to support a Marine expeditionary force (MEF) DASC, (i.e., 2 communications variants, 3 operations variants, and 20 operator workstations). Each communications variant is cabled to support three UHF GRC-171 radios, two UHF/VHF VRC-83 radios, two HF VRC-102 radios, two external HF radios, and one external UHF/VHF radio. A MEF-level CASC provides—

- 24 radios.
- 9 (32-KB) or 18 (16-KB) telephone lines.
- 20 user control devices.

AN/UYQ-3A Mobile Direct Air Support Center (Airborne)

The AN/UYQ-3A mobile DASC (airborne) (DASC[A]) (fig. 2-1) provides an echelon capability in MEF or Marine expeditionary brigade (MEB) operations or as an airborne platform in KC-130 aircraft. In addition to airborne operations, the shelter can also be operated from a truck. AN/UYQ-3A employment options provide the MAGTF with flexible direct air support control options. See table 2-1 for equipment characteristics.

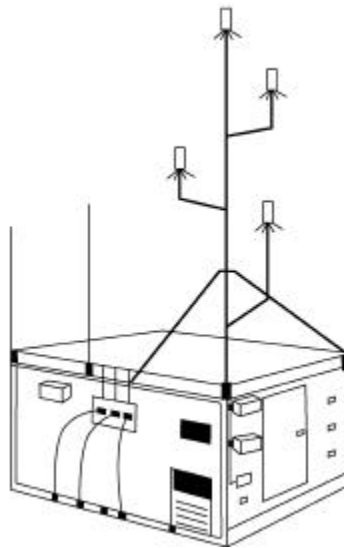


Figure 2-1. AN/UYQ-3A DASC(A).

Table 2-1. Equipment Characteristics.

Length	12 feet, 8 inches
Width	7 feet
Height	7 feet
Square	87.6 square feet
Cube	614 cubic feet
Weight	6,000 pounds (approximately)
Power requirements	115/208 volts, 400 hertz, 15 kilowatts, 3 phase, 4 wire

Operator Positions

The AN/UYQ-3A shelter contains seven crew positions. Each crew position is equipped with a control panel to access the shelter's radios and internal communication system.

Communications

The AN/UYQ-3A contains three UHF, one VHF, and two HF systems along with each radio's associated cryptographic device. The AN/UYQ-3A also has the ability to use external radios when in the airborne operational configuration. However, special arrangements must be made with the supporting KC-130 squadron to externally mount antennas to the host airframe.

Situation Displays

The AN/UYQ-3A has one primary map display for plotting aircraft position, fire support measures, friendly and enemy ground

situation, and air control points and measures. Smaller situation displays are available at operator positions for the use of individual operators.

AN/MRC-145/138 and Man-Portable Radios

During low intensity operations (i.e., Marine expeditionary unit [MEU] or echelon), the air support element (ASE) will provide liaison personnel to mobile ground forces and perform limited air support control functions for short durations. In these situations, the ASE typically employs mobile configurations that operate from mobile radio communication (MRC) vehicles or use man-portable radios. When MRC vehicles are used to support DASC, echelon or liaison functions, a 60-cycle generator is preferred for radio power.

Mobile Electric Power

The MASS provides its own 60-hertz mobile electric power to support DASC operations.

Capabilities

The flexibility, mobility, and echelon capability of the DASC make it an effective command and control agency.

Flexibility

The MASS is capable of task-organizing to provide a variety of direct air support control options. Mission flexibility is demonstrated by the DASC's capability to operate from ground sites or from an airborne platform.

Mobility

MASS equipment is transportable via conventional air, ground, rail or surface shipping means. The MASS table of equipment provides organic motor transportation equipment that is capable of moving DASC equipment. DASC equipment required to support a MEF/MEB can be set up and operational in approximately 1 hour after it arrives on site. However, materials handling equipment support not organic to the MASS is required to move shelters when loading the AN/UYQ-3A into a KC-130 for airborne DASC (DASC[A]) operations.

Echelon Capability

The DASC has the capability of moving to alternate locations with uninterrupted operations. During such movements, the DASC would delegate its functions to an echelon DASC or DASC(A).

Limitations

The DASC is limited to procedural control and line-of-sight (LOS) communications. Its large electronic signature also limits the DASC.

Procedural Control

The DASC does not possess radar or digital data link equipment. Therefore, situational awareness depends on pilot/terminal controller reports regarding the aircraft's position.

Line-of-Sight Communications

The DASC is susceptible to UHF and VHF LOS communications limitations. The curvature of the earth and terrain can preclude effective communications, especially with low flying aircraft.

Electronic Signature

The DASC has a large electronic signature generated by its communications equipment. Effective planning and employment of emission control (EMCON) procedures are paramount to maximizing survivability.

Equipment Upgrades and Replacements

Improvements to Marine direct air support control capabilities encompass the service life extension program for the DASC(A) and the common aviation command and control system (CAC2S).

CAC2S will provide a suite of common equipment utilized in air, land, and sea configurations. CAC2S operational nodes, currently referred to as the DASC, tactical air operations center (TAOC), air traffic control (ATC), and low altitude air defense will use shared, distributed information systems and databases to enhance rapid, flexible planning and execution.

Chapter 3 Planning

Close coordination for the delivery of surface- and air-delivered weapons is crucial to both the MAGTF's economy of force and the safety of Marines operating within the delivery area. The DASC's planning efforts significantly contribute to the efficiency by which these assets are employed. Marine Corps Order (MCO) 3501.9B, *Marine Corps Combat Readiness Evaluation System (Short title: [MCCRES])*, Volume VIII, *The Marine Air Command and Control System (MACCS)*, outlines specific planning requirements for the DASC. Though planning of direct air support activities outlined below may occur in sequence, most steps will be conducted concurrently with one another.

Initial

After receipt of an initiating directive (in the case of an amphibious operation), an operation plan's initiating order or an establishing order (in the case of a support relationship), the DASC will begin the initial planning phase. Considerations for the initial planning phase include but are not limited to the following:

- Establishing early liaison with the amphibious task force (ATF) and/or joint force planners and control agencies for relevant phases of operations.
- Providing air support and aircraft control input to the aviation estimates of supportability for operations assigned, and identifying limitations or problem areas. The input to the aviation estimates of supportability should summarize significant aviation aspects of the situation as they might influence any course of

action (COA) proposals and evaluate and determine how aviation units can best be employed to provide support. The aviation estimates of supportability's end product will include a recommended COA for the ACE commander. At a minimum, aviation estimates of supportability will include the following:

- Contemplated COA that can best be supported by the ACE.
 - Salient disadvantages of less desirable COAs.
 - Significant aviation (to include air command and control [C2]) limitations and problems of a logistical nature.
 - Measures to resolve aviation problems to include requesting additional theater assets.
-
- Coordinating relevant communication requirements for subordinate, adjacent, and higher-level circuits with the ACE/MAGTF communications planners. These requirements should include the following:
 - Identification of desired connectivity.
 - Encryption hardware and software.
 - Communications requirements that are beyond the capabilities (or assets) of the MASS.
 - Authentication materials.
 - Establishing coordination with the local regional automated services center.
 - Reviewing the initial force list and/or MACG/ACE planning guidance to determine the role of UAVs in the operation.
 - Recommending to the MACG/ACE planning staff required UAV mission data and format, as it should appear on the ATO.
 - Ensuring air support requirements are coordinated with planned air defense measures.

Intelligence

The DASC will require updated and complete intelligence information to carry out its support efforts. The DASC's intelligence planning is primarily concerned with the enemy orders of battle (EOBs), capabilities, and tactics. Intelligence planning considerations will include the following:

- Receiving and disseminating to DASC personnel information from the preliminary and detailed aviation intelligence estimates. This includes submitting requests for information (RFIs) for those DASC concerns that may include the following:
 - Enemy capabilities.
 - Off-road trafficability.
 - Terrain limitations not delineated on maps.
 - Electronic order of battle.
 - Weather projections.
 - Other information not addressed in the operation plan.
- Developing and forwarding RFIs to higher headquarters. The RFIs should be simple, concise, and consist of the following:
 - Positive requests.
 - Qualifying questions and statements.
 - Prioritization of submitted requests.
- Recording information in a journal/workbook for ease of study and comparison, and sending that information, when appropriate, to higher, adjacent, and subordinate units.
- Obtaining and maintaining a complete EOB that includes information on the following:
 - Missiles.
 - Aviation assets.

-
- EW.
 - Ground forces.
 - Space assets.
 - Determining and interpreting information of significance to the DASC and forming logical conclusions that can serve as the basis for determining the effects on air support operations.
 - Establishing intelligence collection and dissemination procedures to include the following:
 - Timeliness.
 - Usability of form.
 - Pertinence.
 - Security of gathered information.
 - Preparing a detailed rear area threat assessment for the MASS detachment.

Site Selection

The site selection planning process begins once the MAGTF's area of operations (AO) is identified. During the site selection process, planners must ensure that adequate space for site establishment is identified; sufficient access to the site is afforded; and that communications connectivity can be maintained with other MACCS agencies, elements of the GCE, combat service support element, forward operating bases (FOBs), and airborne aircraft. Site selection planning concerns include the following:

- Conducting coordination with the FFCC and FSOC to ensure that DASC siting considerations are included in the FFCC/FSOC's site selection.

- Using computer analysis and map surveys to determine suitable DASC/FSCC sites. Computer software programs (e.g., system, planning, engineering evaluation device) can be used with map surveys to provide empirical data and analysis on the following key points:
 - Communications connectivity.
 - Cover and concealment.
 - Trafficability.
 - Sufficient space for the DASC's tactical deployment (dispersion).
 - Communications electronic protection (EP) supportability.
- Identifying the alternate operational sites above.
- Determining the required DASC equipment based on the MAGTF scheme of maneuver and projected locations of MACCS/terminal control agencies within the AO.
- Establishing priorities for emplacement of equipment.
- Conducting a physical reconnaissance of the site with FFCC and FSCC personnel.
- Determining and recommending to the ACE/MAGTF communications planners any requirements for ground radio relay/retransmission sites to support DASC operations.
- Determining communication capabilities from prospective sites based on Electromagnetic Compatibility Analysis Center or other radio-frequency studies.

Specific Air Support

The ACE staff will normally augment several air support specialists to assist in the preparation of the MAGTF operations order. Crucial decisions, to include ACE apportionment of assets for direct air

support, should be addressed during this planning phase. Air support planning efforts should include the following:

- Providing input to the preparation of the ACE/MAGTF communications plan to include DASC communications required for effective coordination and control of direct support aircraft, encryption hardware and software, and authentication materials.
- Recommending air support control measures (e.g., control points, return to force [RTF] procedures) to the ACE/MAGTF planning staff.
- Remaining cognizant of planning and coordination involved in establishing airspace management/control procedures.
- Planning for the DASC's tactical redeployment to alternate sites, along with the FSCC, in response to changes in the MAGTF's requirements, the threat or the ground force positions.
- Recommending UAV control measures for deconfliction/integration with direct air support aircraft and other supporting arms.
- Determining communication paths and radio in/out procedures required with the UAV unit's ground control station (GCS).
- Determining the requirement to employ airborne extensions to maintain communications connectivity and air control with direct air support aircraft and other air control agencies as appropriate.

Electronic Warfare

In situations where the enemy has a known EW and electronic intelligence (ELINT) collection capability, the unit S-6 officer

will assume an active role in the DASC's EW planning. EW planning considerations involve—

- Obtaining from the ACE/MAGTF EW officer a detailed intelligence assessment of the enemy's electronic order of battle.
- Developing an EMCON plan for the DASC that supports the ACE/MAGTF EMCON plan. DASC personnel should consider the following factors:
 - Minimum communication/no communications procedures.
 - Use of brevity codes and authentication tables.
 - Use of communications security (COMSEC) materials.
 - Delegation of EMCON control authority.
 - Signal security.
 - Circuit discipline.
 - Reporting procedures.
- Determining the locations of radios and radio antenna farms after considering the signals intelligence /EW threat.
- Planning for the maximum use of secure communications.
- Providing input to the MAGTF command and control warfare (C2W) plan.
- Ensuring that planners, operators, and users of electronic equipment thoroughly understand the EW threat and the EMCON/EP techniques used to counter the threat.

External Support

Planners should consider the DASC's method of employment and necessity for mobility when determining the support required from external units. External support planning considerations for the DASC will also include distribution points for food; water; batteries; and petroleum, oils, and lubricants. The DASC may also require externally sourced personnel to augment their site security.

Chapter 4 Operations

The DASC responds to the GCE commander's requirements for direct air support by processing immediate air support requests, coordinating aircraft employment with other supporting arms through the GCE's senior FSCC, and directing designated air operations. The DASC's role in direct air support provides a crucial link between the GCE and the ACE.

Employment Options

The MASS commander may employ an entire DASC, DASC(A), ASE or air support liaison team (ASLT) to support the MAGTF.

DASC

As the MAGTF's primary direct air support control facility, this configuration provides the operational capability to perform DASC-related functions and is normally employed with MEB or larger MAGTFs. The DASC, when practical, collocates with the GCE's senior FSCC. An electronic link may be an acceptable alternative in situations where DASC siting requirements differ from FFCC's/FSCC's requirements.

DASC(A)

Consisting of an AN/UYQ-3A employed in a KC-130 aircraft, the DASC(A) can be employed as an independent air control agency, but normally serves as an airborne extension of the

DASC. Air superiority is essential in the area where a DASC(A) is to be employed. The operational period for a DASC(A) is limited by the host aircraft's time on station capabilities. Normally used during MEB and larger MAGTF operations, the DASC(A) is flexible and adaptable to a variety of operational situations including the following:

- Extending overland displacement.
- Supplementing the DASC's communications coverage while it displaces or when communications become degraded.
- Operating in geographic areas where terrain adversely affects DASC communications.
- Performing amphibious operations to aid in phasing direct air support control functions from the Navy TACC to the DASC.
- Performing missions as directed by the MAGTF commander, ACE commander or MASS commanding officer.

ASE

An ASE is a task-organized element employed by the MASS to perform various air support control functions. Employment options can range from MEU-level operations characterized by limited assets and endurance, to a multi-division operation where the ASE is almost if not identical in capability but set apart in responsibilities and subordinate to the DASC. The ASE can function as an extension of the Navy TACC/helicopter direction center (HDC), in conjunction with the battalion tactical air control party (TACP).

In support of a multi-major subordinate command scenario, the ASE may be augmented with assets and personnel to support continuous control of direct air support over an extended period. In this type of situation, the DASC would be employed in a central

location (i.e., MEF) to coordinate the efforts of the ASE in support of the multiple Marine divisions.

ASLT

The ASLT is task-organized by the MASS to maintain liaison between the DASC and the FSCC, normally in situations where the DASC cannot remain physically collocated with the senior FSCC/FFCC.

Role

The ASLT is not a DASC. The ASLT serves to maintain the face-to-face coordination between the DASC and FSCC vital for the effective coordination and integration of DAS missions with the employment of other supporting arms.

Composition

The number, size, and composition of ASLTs are determined by the MASS commanding officer based on the experience of FSCC personnel, terrain, operational tempo, and the mobility of the GCE. An ASLT typically varies in size from a single Marine with a man-portable radio or field telephone to a number of Marines operating from MRC vehicles.

Concept of Employment

While a particular DASC configuration may be identified with a MEF, MEB or MEU, the specific requirements for a given situation will dictate the actual configuration needed for mission success. One DASC is capable of providing direct air support control

functions to a single division in support of the division's main effort. The DASC's support of multiple divisions requires employment of assets beyond those normally found in a single MASS.

MEF

Coordination and control of direct air support functions for MEF operations require a substantial DASC capability based on the communications requirement and scheme of maneuver, as well as the number of aircraft anticipated to provide the GCE with direct air support. During MEF operations, the DASC is generally collocated with the senior FSCC/FFCC. The DASC must maintain an echelon capability to provide continuous air control and communications during movement periods. An ASLT may be used in situations where the DASC cannot remain physically collocated with the senior FSCC/FFCC. A DASC(A) may also be employed to assist the DASC in its functioning or to augment their communications. A typical MEF-level configuration (fig. 4-1) consists of the following:

- AN/TSQ-207 CASC, consisting of three operations vehicles/two communications vehicles with trailers.
- Access to 24 radio channels (HF, VHF-AM/FM, and UHF).
- Access to 9 or 18 telephone circuits.
- Twenty operator workstations. (Each workstation will normally consist of a single UCD and a shared laptop computer.)
- Intra-communications for 20 operators.
- Automation to support 12 operators.
- Tent space, environmental control, and power to support a sustained configuration.

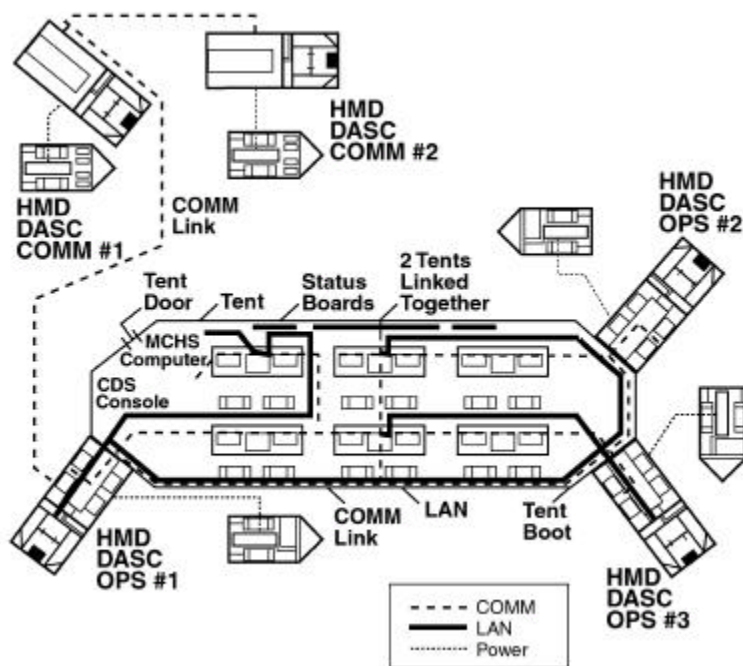


Figure 4-1. MEF-Level CASC Configuration.

MEB

In MEB operations involving one or two regiments, the DASC will normally collocate with the FSCC responsible for coordinating GCE supporting arms. The DASC must maintain an echelon capability to provide continuous air control and communications during movement periods. A typical MEB-level configuration (fig. 4-2 on page 4-6) consists of the following:

- AN/TSQ-207 CASC, consisting of one operations and one communications vehicle with trailers.
- Access to 12 radio channels (UHF, HF, VHF, and appropriate crypto).

- Access to 3, 6, or 12 phone lines (dependent on how many NAUs are used).
- Access to 10 operator UCDs.
- Intra-communications for up to 10 operators.
- Automation to support six operators.
- Tent space, environmental controls, and power to support a mobile configuration.

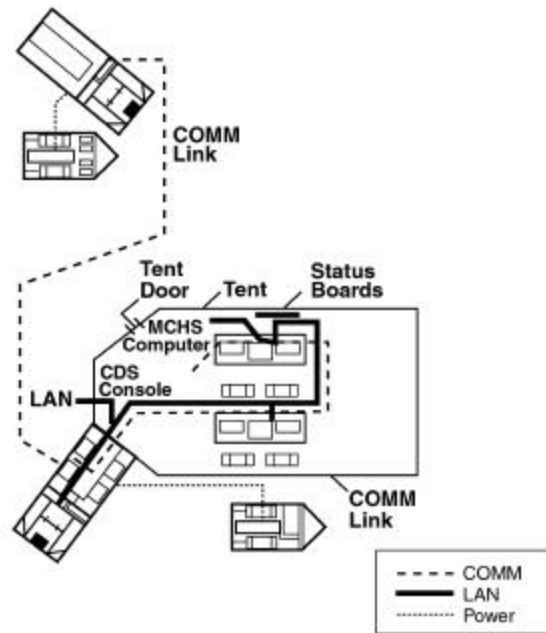


Figure 4-2. MEB-Level CASC Configuration.

MEU

The MEU ACE contains task-organized air C2 agencies and equipment under the cognizance of the MACG detachment. The MASS normally deploys an ASE that will support MEU-level operations to multi-division operations where the ASE is almost if not identical in capability but subordinate to the DASC. A typical ASE configuration (fig. 4-3) will consist of the following:

- AN/TSQ-207 CASC, consisting of one operations/communications hybrid vehicle with trailer.
- One NAU with six radios.
- Two NAUs with six radios and three 32-KB or six 16-KB phones or radios.
- Intra-communications for up to 10 operators.
- Tent space, environmental controls, and power to supply a mobile configuration. If units bring a tent, it must be compatible with the mobile configuration.

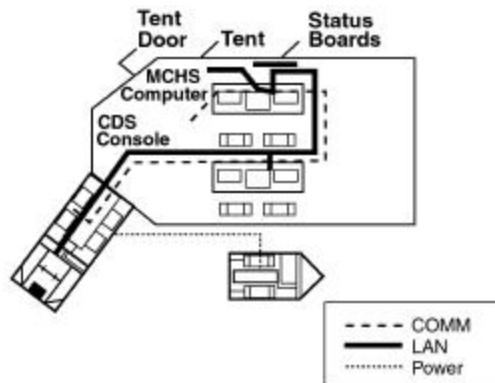


Figure 4-3. ASE CASC Configuration.

Interagency Relationships

DASC/TACC

The DASC is subordinate to the Marine TACC, tactical air direction center (TADC) or Navy TACC depending on command relationships and the phase of passing air C2 functions ashore during amphibious operations. Whereas the Marine TACC or Navy TACC provides centralized command of air operations within a designated AO or AOA, the DASC provides for decentralized control of OAS, assault support, electronic warfare, and air reconnaissance missions within their designated area.

OAS

Ideally, the ACE commander will decentralize the control of OAS by delegating authority to the DASC to divert airborne assets to missions with higher priority as coordinated/approved by the senior FSCC/FFCC and to launch on-call CAS aircraft. This serves to ensure minimum response time to the MAGTF's direct air support requirements. The Marine TACC, TADC or Navy TACC responds to the DASC's requests to fill the GCE's needs for additional direct air support. The DASC keeps the Marine TACC, TADC or Navy TACC informed on the progress of direct air support missions, the effectiveness of the OAS effort, and the friendly and enemy air/ground situation. The DASC passes combat information received from other sources to the Marine TACC, TADC or Navy TACC and other agencies/aircrew as appropriate.

Assault Support

Ideally, the ACE commander will decentralize the control of assault support missions and allow the DASC to divert and/or

launch on-call assault support aircraft to ensure minimum response time to requests for assault support. Control of assault support aircraft outside of the DASC-controlled airspace will be performed by the appropriate MACCS agency. To maintain the flexibility to immediately divert airborne assets, assault support aircraft will normally maintain some communication with a MACCS element. In the conduct of assault support, the Marine TACC, TADC or Navy TACC should assume a supervisory mode and respond to the DASC when additional assets are required to continue the assault support effort. In turn, the DASC must provide their senior agency with timely information regarding the status of assault support missions and the overall effectiveness of the assault support effort.

Electronic Warfare

The DASC will coordinate direct support EW missions with the senior FSCC/FFCC to ensure that airborne EW is effectively integrated as a combined arm. Coordination of airborne EW efforts includes but is not limited to electronic surveillance, targeting, jamming, electronic BDA, and offensive anti-air warfare. The DASC will ensure, as required, necessary coordination is made to protect friendly ground units and equipment from the effects of electronic attack (EA) and antiradiation missile attack. Requests for EW are submitted by the appropriate FSCC either to the DASC for immediate requests or to the Marine TACC/Navy TACC for preplanned requests.

Air Reconnaissance

The DASC does not normally coordinate the MAGTF's long-range air reconnaissance efforts. However, the DASC will coordinate with aircrews and the UAV GCS to conduct air reconnaissance in direct support of the GCE. The DASC will provide

verbal inflight and MISREP information that will be passed on to the Marine TACC/Navy TACC and the senior FSCC/FFCC. Hard copy imagery is requested through G-2/S-2 channels. Requests for air reconnaissance missions are submitted by the G-2/S-2 to the DASC for immediate requests or to the Marine TACC/Navy TACC for preplanned requests.

DASC/FSCC

The FSCC/FFCC is the final arbitrator of supporting arms integration conflicts and will make decisions in cases of conflicting requests for fire support assets. The FSCC provides the DASC with updates to unit boundaries and fire support coordinating measures, friendly and enemy unit positions, pertinent intelligence data, and other prearranged data items as they are received at the FSCC. The FSCC also provides the DASC with information on gun positions, gun-target lines, and gun trajectories near aircraft flight routes.

The DASC is responsible to the FSCC to provide timely information on the following:

- Predicted flight paths for aircraft under the DASC's control.
- BDAs.
- Status of outstanding requests.
- Pertinent intelligence data.
- Delays or cancellations to the ATO.
- Status of ongoing missions.
- Other prearranged data items.

The FSCC/FFCC is responsible to the DASC to provide timely information on the following:

- Location of friendly forces and artillery.
- Location and capabilities of enemy forces.
- TACP locations.
- Target lists.
- Overlays of the GCE scheme of maneuver.
- Priority of fires/effort.
- Approval of joint tactical air strike requests (JTARs)/assault support requests (ASRs).
- Plans to displace/echelon.
- Plans for large-scale helicopter/ground movements.

Air Support, Reconnaissance, and EW Requests

Immediate air support requests sent directly from the requesting unit to the DASC are approved by the FSCC. Various forms for requesting air support include the following:

- JTAR for immediate OAS (CAS, DAS).
- ASR for immediate assault support.
- Joint tactical electronic warfare request (JTEWR) for airborne EW.
- Joint tactical air reconnaissance and surveillance (JTAR/S) for air reconnaissance.
- Joint tactical airlift request (may be required in joint operations instead of the ASR to request assault support).
- Immediate air evacuation, to include casualty evacuation (CASEVAC) (requested using the ASR).

Upon receiving the request, the DASC will clarify any needed portions and assign a request number for reference purposes. For

JTARs, JTAR/Ss, and JTEWRs, the request number is based on the date the JTAR was received followed by a consecutive odd number (e.g., 11-1, 11-3, 11-5). For ASRs, the request number is based on the date it was received followed by a consecutive even number (e.g., 11-2, 11-4 or 11-6). CASEVAC request numbers are based on the date the request was received and a consecutive letter of the alphabet (e.g., 11-A, 11-B or 11-C).

The senior FSCC/FFCC monitoring the tactical air request/helicopter request net may approve, disapprove or modify the request. Normally, the senior FSCC/FFCC approves the request by remaining silent (silence is consent unless previous commander's guidance requires positive approval). However, for purposes of confirmation or when doubt concerning the validity of the request exists, the DASC's SAD should coordinate with the FSCC's air officer for clarification of the request.

Diverting Aircraft

The ACE commander may delegate authority to the DASC to divert airborne aircraft or launch on-call aircraft. However, even when delegated this authority, DASC personnel will not normally make divert/launch decisions without consulting with appropriate FSCC personnel when possible. This coordination of fires is effected to limit duplication of effort, ensure appropriate use of assets, and enhance situational awareness between the DASC and FSCC. It also serves as another check and balance to ensure that the aircraft is diverted in concert with the established priorities for direct air support.

DASC/Anti-air Warfare (AAW) Agencies

The DASC disseminates air defense control measures received from the TACC and/or TAOC to applicable MAGTF elements,

surface-to-air missile units, and aircraft under DASC control. The DASC provides friendly aircraft positions to air defense units/agencies (e.g., Stinger units, TAOC) to assist in the aircraft identification process. The DASC coordinates the RTF of aircraft under its control with the appropriate AAW agency, normally the TAOC. The Stinger unit commander may establish a command post at the DASC to gain information on the location of friendly direct air support and assault support aircraft.

DASC/TAC(A)

The TAC(A) is an onsite airborne extension of the DASC and FSCC or the Marine TACC/Navy TACC. The TAC(A)'s authority over aircraft operating within an assigned area will be specified by the DASC or TACC/TADC as appropriate. The TAC(A)'s principal responsibilities are to avert conflicts between aircraft and to coordinate the employment of air assets with other supporting arms. The TAC(A) coordinates as necessary with TACPs, FSCCs, forward air controllers (airborne) (FAC[A]), ASC(A)s, and artillery and NSFS fire direction centers. Employment of a TAC(A) will depend on mission requirements and resource availability.

DASC/ASC(A)

The ASC(A) serves as an agency of the Navy tactical air control system/MACCS and is an airborne extension of the HDC or DASC. The ASC(A) supports the air C2 system and assists in airspace coordination and integration of assault support operations when the HDC/DASC is degraded or requires additional augmentation. The ASC(A) is normally used when numerous assault support operations are conducted or when the scope and complexity of the operations dictates this capability. The

ASC(A) coordinates with TAC(A)s and FAC(A)s to provide CAS support and/or assault support operations.

DASC/TACP/Forward Air Controller (FAC)/FAC(A)

The DASC receives and processes immediate direct air support requests from these terminal controllers. The DASC keeps the terminal controller and senior FSCC/FFCC advised of the status of aircraft filling their request. The DASC provides aircraft direction and mission updates to aircraft prior to executing a procedural turnover to the terminal controller. This necessitates free information exchange to provide aircrews with the most complete and up-to-date information possible.

DASC/UAV

The DASC controls the UAVs' inflight progression/egression to and from working areas and monitors its activities while in its working area. The UAV normally enters the airspace control system through the ATC element at the UAV's operating airfield. After receiving a handoff from the ATC element, the DASC provides routing and altitude clearance for the UAV. The UAV controllers maintain continuous communications with the DASC. The DASC is kept advised of the UAV working area (using control points and established routes) and altitude by the GCS to ensure deconfliction with other aircraft and friendly surface delivered fires. The UAV controllers also supply the DASC with near-real-time surveillance information. This information is forwarded to the TACC/FSCC for use in the intelligence/targeting effort.

DASC/Medical Regulating Team (MRT)

The landing force medical regulating control officer (LFMRCO) and the MRT normally physically or electronically collocate with the DASC. The LFMRCO establishes a medical regulating control center. A communications link is established between the DASC and the MRT to facilitate coordination of CASEVAC. The LFMRCO will keep the DASC advised on availability of primary and alternate medical treatment facilities and will recommend CASEVAC to the facility best suited for a casualty's medical needs. The DASC will keep the LFMRCO advised of status of available CASEVAC aircraft and missions. The LFMRCO will provide organic communications assets for the medical regulating nets. See Marine Corps Warfighting Publication (MCWP) 4-11.1, *Health Service Support Operations*, for additional information on the MRT.

DASC/Rear Area Operations Center (RAOC)

Immediate air support requests from the MAGTF rear area are cleared through the air officer in the RAOC. These requests may be relayed to the DASC for processing. The DASC's ability to process immediate air support requests from the RAOC depends on many factors including physical location of the agencies, operational employment considerations, and the ability for both agencies to communicate. When geographical location and communications connectivity reduce response time, immediate air requests may be forwarded to the Marine TACC's air support coordination section for action (if the Marine TACC is located in the rear area). The TACC's air support coordinator (ASC) then coordinates mission specifics with the DASC.

DASC in Amphibious Operations

Phasing Ashore

During the buildup of combat power ashore, the MACCS will employ its assets incrementally. During MEF and MEB operations, the initial DASC capability introduced ashore could consist of a single CASC shelter, communications suite, and associated support equipment.

As the operation matures, additional DASC shelters and communications equipment could be introduced to expand the DASC's capabilities. In MEU-level operations, the ASE may be the first direct air support element to arrive ashore. ASEs may be equipped with a CASC, MRC vehicles or man-portable radios.

Responsibility

The command relationship options available to the establishing authority of an amphibious operation include operational control, tactical control, and support. Typically, a support relationship is established between the ATF commander and the landing force (LF) commander based on their complementary capabilities. Normally, the designated commander exercises the initial, overall control and coordination responsibility for the delivery of NSFS, air support, and LF artillery fire. When the LF commander is ashore and has established the necessary facilities and when the tactical situation permits, this coordination responsibility is passed to the LF commander. Thereafter, the LF coordinates the supporting arms fires with maneuver forces. However, complete coordination authority is seldom passed at one time.

Normally, the LF assumes responsibility for various fire support functions as the necessary capability for that function is established ashore. The DASC is usually the first principal MACCS agency ashore and, once established, will normally assume control of direct air support aviation assets over land while the Navy TACC retains control of aircraft moving from ship to shore.

AF Supporting Arms Agencies

The AF provides two principal agencies to control and coordinate supporting arms fires during amphibious operations: the Navy TACC and the supporting arms coordination center (SACC).

Navy TACC

The Navy TACC is the primary air control agency within the AOA or designated AO from which air operations supporting the AF are controlled. The Navy TACC controls both air support and AAW aircraft.

SACC

The SACC is a single location on an amphibious ship in which communications facilities incident to the coordination of fire support of the artillery, air, and NSFS are centralized. The SACC is the naval counterpart to the LF's FSCC.

Transfer of Control and Coordination of Supporting Arms

During an amphibious operation, control of air and NSFS is initially afloat. The LF controls artillery through the GCE commander. When necessary facilities of the LF are ashore and functioning and the tactical situation permits, the LF requests that control of NSFS and/or direct air support functions be passed

ashore. Direct air support functions are normally passed ashore as MACCS facilities become functional.

The LF commander exercises responsibilities for the coordination of supporting fires through the senior FSCC/FFCC and MACCS agencies. Each agency must ensure it has the required information and requisite communications before supporting arms coordination responsibilities are passed from the ATF commander to the LF commander. Since most of the operational coordination occurs in the FSCC, the establishment and functioning of the FSCC(s) is critical to passing supporting arms coordination functions ashore. Once ashore, the FSCC(s) and the DASC begin preparing for the passage of supporting arms coordination and control functions ashore. Typically, this preparation includes ensuring—

- Communications are established with the appropriate control agency afloat.
- Communications are established with aircraft.
- Communications are established with terminal controllers/spotting teams ashore.
- Target lists are on-hand.
- Current ATO is on-hand.

The operational functions that must be completed before passing supporting arms coordination functions ashore are normally outlined in a checklist. Completion of specific checklist items is often coordinated between the DASC and the SACC/Navy TACC.

Once all or part of the specified prerequisites for passing supporting arms control and coordination functions ashore are met, supporting arms coordination functions may be passed ashore. This normally occurs when the LF requests that the ATF pass control and/or coordination responsibilities of a particular sup-

porting arms function from the responsible agency afloat to its shore-based counterpart. Formal messages mark the completion of each step in the sequence of passing coordination and control of supporting arms from afloat to ashore. Often, the actual transfer of responsibility is requested and granted by voice radio transmission followed with formal messages.

Not all direct air support control functions need be passed ashore at once. For example, control of assault support aircraft may be passed ashore before control and coordination of direct air support aircraft. Because the various functions of aviation may be phased ashore incrementally, the ACE commander (through the LF commander) must specify those aviation functions that the DASC is ready to assume.

Once the DASC is established ashore and has been passed responsibility for the coordination of direct air support functions, the DASC is responsible to the Navy TACC for the execution of direct air support functions. If a Marine TADC has been established ashore, the Navy TACC may delegate the coordination responsibility to it. After the TACC functions are phased ashore, normal MACCS command relationships are resumed.

DASC in Joint/Multinational Operations

The DASC will be involved to some degree with joint/multinational operations. Joint operations are those operations conducted with other United States Services. Multinational (coalition) forces are those of friendly/allied nations with whom the United States is conducting operations. Both types of operations require special consideration for the DASC.

Joint Operations

Working with other United States Services requires DASC crewmembers to be familiar with the structure and employment considerations of other Service equipment, agencies, doctrine, and personnel. Control procedures for the DASC's airspace control area (or sector) must be briefed to joint service aviators, control agencies, and terminal controllers before these personnel conduct operations in DASC airspace. Procedures must be in place for those operations in which the DASC is to hand over aircraft from one joint agency (or airspace control authority) to another. The DASC must also obtain and be familiar with communications plans and orders that may affect their airspace control procedures.

DASC and Air Support Operations Center (ASOC)

The Air Force's ASOC is an element of the tactical air control system most analogous to the DASC. The ASOC is located at the Army corps level and facilitates immediate requests for air support submitted by the Army. Requests for air support are submitted by Air Force TACPs over the Air Force air request net that functions similar to the Marine Corps tactical air request/helicopter request net. If the request can be supported by an echelon lower than the Corps, it is filled at that level.

Once the request reaches the ASOC, the aircraft needed to support the mission are requested from the Air Force air operations center (AOC), a counterpart to the Marine TACC. The AOC will direct the ASOC on how to fill the request (launch or divert). Aircraft supporting the request will check in with the ASOC and be passed to the TACP. Like the DASC, the ASOC is a procedural control agency.

DASC and Navy Counterparts

The DASC does not have a direct counterpart in the Navy's organizational structure. Rather, the DASC performs similar functions to parts of the Navy's HDC for coordination of helicopter missions and the Navy TACC for coordination of direct air support missions. See Naval Warfare Publication (NWP) 3-09.11M/Fleet Marine Force Manual (FMFM) 1-7, *Supporting Arms in Amphibious Operations*, for details on naval air control agencies.

Multinational Operations

DASC considerations for conducting joint operations can be aptly applied to multinational operations. In multinational operations, there is an absolute requirement to transverse the language barrier, not only in terms of the language used, but also regarding common terminology. DASC personnel must also become familiar with varying forms and formats for the ATO/North Atlantic Treaty Organization (NATO) air tasking message. If possible, liaison personnel from the host nation/allied country should be included in the DASC. DASC members and MASS communications experts are normally tasked to provide liaison personnel and communications links between the DASC and foreign nation direct air support agencies.

Special Considerations

Members of the Marine liaison group (MLG)/air/naval gunfire liaison company (ANGLICO) will typically provide terminal control services to CAS aircraft working with joint and multinational forces. It is important that DASC personnel make liaison with each MLG/ANGLICO team leader prior to the onset of joint/multinational operations.

Communications frequencies, airspace control procedures, DASC location, alternate and tertiary communications capabilities, etc., must be briefed and understood by both MLG/ANGLICO and DASC Marines. MLG/ANGLICO, in turn, must keep the DASC apprised of their locations and intentions throughout the operation.

Procedural Control of Direct Air Support Aircraft

Procedural control is defined as “a method of airspace control which relies on a combination of previously agreed and promulgated orders and procedures.” (JP 1-02) Controlling procedures include, but are not limited to control points (CPs); minimum-risk routes (MRRs); RTF procedures; formal and informal airspace coordination areas; and positive, two-way communications between the DASC and the aircrew. Although aircrews are ultimately responsible for the safety of their aircraft, the DASC assists the aircrews by maintaining situational awareness of all that is occurring within the assigned airspace and routing aircraft in a manner that precludes conflict within the airspace.

The three ways in which the DASC can segregate aircraft in the airspace are time, altitude, and lateral separation. Depending on the tactical situation, the DASC will use one of these, or a combination of all three, during the routing of each mission/sortie. Segregation of aircraft, whether by time, altitude or lateral separation, is an important aspect of procedural control and is designed to allow freedom of movement for friendly aircrews. Aircrews can then focus on the mission and eluding enemy detection. Because these methods of segregation are procedural, the DASC must be aware of the entire three-dimensional battlespace

and assist aircrews by gaining their confidence, providing concise and safe routing, and maintaining situational awareness.

Aircrews can assist the DASC by relaying their intentions, radioing the DASC at their designated CP (or while inbound to the CP), responding to the DASC's routing/control, and providing accurate position/location information. The DASC has no radar and must rely on the information it receives from aircrews and other agencies to manage and control the designated airspace control authority's (ACA's) sector. If the information the DASC receives is accurate and timely, the DASC will provide aircrews and other agencies with timely and accurate information. The key to effective procedural control is that the DASC must rely on information it receives from the aircrew, TACC/TADC, FSCC, and other air C2 agencies to build their situational awareness of the three-dimensional battlefield. The DASC is only as good as the information it receives.

DASC Siting Considerations

The DASC provides a crucial interface between the GCE and ACE in regards to direct air support operations. As such, planners must consider several factors when determining the DASC's location.

Proximity to the FSCC

A reliable, consistent link between the DASC and the senior FSCC/FFCC is vital for coordination and integration of direct air support missions with the employment of other supporting arms and for the expeditious processing of immediate tactical air requests and assault support requests. The link (or means of communications) between the DASC and the FSCC can be accomplished

by wire and/or single-channel radio. Preferably, the DASC and the senior FSCC/FFCC are physically collocated; if not, an ASLT may be provided to the FSCC to assist in the transfer of information. Physical collocation significantly enhances coordination between the two agencies. However, electronic collocation with the FSCC is an acceptable alternative if the FSCC site is not large enough to include DASC equipment or if the site does not support the DASC's communications requirements.

Communications

The single most important siting factor for the DASC to consider is its ability to communicate. Because the DASC is a procedural control agency, it gains air situational awareness through communication with aircraft, terminal air controllers, air defense agencies, and other air C2 agencies involved with direct air support operations. As such, the primary rule for positioning the DASC is that the DASC must be located where it can communicate best to optimize its effectiveness.

Security

In addition to protection from the enemy's direct fire weapons, the DASC should be located in an area that affords reliable, secure communications. Optimal use of terrain that masks the DASC from enemy positions, directional antennas, and remoting and dispersing antennas enhance communications and serve to reduce the DASC's electromagnetic signature. These considerations have both a positive and negative effect on DASC operations and must be weighed against the DASC's need for mobility, time for site setup and teardown, and ability to effectively communicate with aircraft and other ground agencies.

Mobility

The requirement to employ a mobile DASC must be addressed as early as practical in the planning cycle. Because of its extensive communications and security requirements, the DASC should remain established in a single location as long as practical. Factors influencing the DASC's displacement include movement of the GCE (and its FSCC) and enemy threat.

Future Employment

The historic employment of the DASC will not change in the foreseeable future. Traditionally, the DASC has been employed using three types of configurations: DASC, DASC(A), and ASE. The CASC provides a modular capability that allows the DASC to employ its primary ground configurations, DASC, and ASE in their doctrinal manner.

DASC Configuration

As the primary direct air support agency for the MAGTF, the DASC configuration, consisting of one or more CASC shelters and associated support equipment, will provide the operational capability to perform doctrinal functions. Capable of task organization, the DASC configuration will normally be employed in MEF or MEB operations. The mobility afforded by the CASC significantly improves the DASC's ability to move on fluid battlefields. In the HMMWV configuration, the CASC is able to establish sites previously unreachable by 5-ton vehicles; thus expanding the number of potential sites available to the DASC.

When moving on the battlefield, the DASC echelons CASC shelter and support equipment necessary to perform the required mission while the remainder of the DASC relocates. This configuration is an echelon DASC.

DASC(A)

The DASC(A) may be used to support echelon operations, augment DASC communications or coordinate air operations as an extension of the DASC. The DASC(A) will normally be employed in MEF or MEB operations.

ASE

The ASE is task-organized to perform various air support control functions. Employment options can range from MEU-level operations characterized by limited assets and endurance, to a multi-division operation where the ASE is almost if not identical in capability but set apart in responsibilities and subordinate to the DASC. The ASE can function as an extension of the Navy TACC/HDC, in conjunction with the battalion TACP.

Appendix A

Crew Briefing Guide/Format

Operations Brief

The DASC operations brief incorporates elements of information that are essential to DASC employment. The operations brief is most appropriate for planners and is not intended to supplant the DASC crew brief. It focuses on a different level and timeframe well before final preparations for execution.

Unlike other MACCS agencies, the DASC shares its planning focus with GCE issues. These issues, outlined below, represent only the most vital topics and are not all-inclusive. GCE issues (in particular) vary depending on the particular exercise or operation.

ASLT personnel can also use information in the DASC operations brief as a checklist for mission critical information. Likewise, an independent ASE can use the operations brief for a mission specific briefing tool or execution checklist. The operations brief format follows.

Intelligence

- NBC capability.
- Night capability.
- Unconventional warfare capability.
- Ground order of battle:
 - Force composition/locations/potential axes of advance.
 - Surface-to-surface missile threat.

- Surface-to-air missile (SAM) threat.
- Antiaircraft artillery (AAA) threat.
- Overall ground threat capabilities assessment.
- Air order of battle:
 - Location/disposition/likely attack axes.
 - AAW capabilities.
 - Offensive air support capabilities.
 - Air-to-surface missile capabilities.
 - UAV capabilities.
 - Satellite overflight information (e.g., capabilities, time).
 - Overall air threat capabilities assessment.
- Electronic order of battle:
 - EA capabilities.
 - Electronic warfare support (ES) capabilities.
 - Overall threat EW capabilities assessment.
- Naval order of battle.
- Centers of gravity.
- Key vulnerabilities.
- Key strengths.
- Most likely COAs.

MAGTF

- MAGTF commander's intent/concept of operations.
- AOA/AO description:
 - Sector limits.
 - Mobility/trafficability.
 - Weather considerations.
- Rules of engagement (ROE).
- Adjacent/supporting units:

- Multinational forces issues.
- National asset (ELINT) support:
 - Joint forces issues.
 - Liaison requirements.
 - Connectivity.

Ground Combat Element

- Force composition.
- GCE commander's intent/scheme of maneuver.
- Fire support coordinating measures.
- Named areas of interest/target areas of interest/high value targets/high payoff targets).
- Priority of fires and locations:
 - Artillery.
 - NSFS.
 - Aviation.

Aviation Combat Element

- ACE commander's intent/concept of employment.
- Launch and divert authority:
 - CAS.
 - Assault support.
 - Air defense.
- OAS:
 - Priority of CAS.
 - Strip launch/airborne alert availability.
 - Location of assets.
- Assault Support:
 - Priorities of assault support.

-
- CASEVAC:
 - Procedures/connectivity.
 - Medical facility location and priority.
 - Tactical recovery of aircraft and personnel (TRAP):
 - Procedures/connectivity.
 - TRAP zones and safe areas.
 - Isolated personnel report (ISOPREP) data.
 - Combat search and rescue (CSAR):
 - Procedures/connectivity.
 - Responsibility.
 - Strip alert aircraft availability, procedures, and locations.
 - Forward arming and refueling point (FARP) and FOB locations and connectivity.
 - Landing zone locations and status.
 - Tanker plan.
 - Air Reconnaissance, UAV employment plan:
 - RIO procedures.
 - Routing/deconfliction plan.
 - Connectivity with the GCS.
 - Air control procedures:
 - MRR/orbit areas.
 - Control points.
 - Weapon engagement zones.
 - RTF/lame duck procedures.
 - ACAs.
 - Fade/bug out plan.
 - UAV loiter area.
 - Hung ordnance jettison area.
 - RIO sequence.
 - Terminal control information.

- Airborne C2 availability/employment.
- Air defense warning condition/state of alert/weapons control status information.
- ATO dissemination.
- MACCS agency casualty procedures.

Communications

- Communications architecture.
- EMCON procedures.
- Chattermark procedures.
- Prowords/codewords.
- Execution checklists.
- Cryptography:
 - Required hardware/software.
 - Changeover times.
 - Current period for the communications-electronics operating instructions.
 - Challenges and passwords.
 - Required reports.
 - Communications net prioritization/restoration.
 - Intelligence connectivity.

Logistics Resupply

- Water/fuel/meals, ready-to-eat/batteries.
- Repair parts/expendables/replacement of major items.
- Personnel/administrative issues.
- Transportation (e.g., airlift, sealift) considerations.

Questions

Crew Brief

Crew briefs are designed to pass mission critical information, discuss pertinent procedures, and critique/recap significant events. Crew briefs should be as detailed as practical but may be abbreviated to meet mission requirements. The minimum required information to be passed in a DASC brief is specified in MCO 3501.9B. The DASC's crew briefs typically occur in three phases:

- Pre-watch brief.
- Crew change brief.
- Post watch debrief.

Pre-Watch Brief

Time Hack

Introduction

- Identifies alternate senior air director and crew leaders.
- Identifies briefers.
- Mission statement priorities.
- Status of controllers' responsibilities in the AOA/AO.

Intelligence (S-2 Officer)

- Weather:
 - Local weather.
 - Ingress/egress route weather.
 - Target weather.
 - Weather, location, and capabilities.

- Light data:
 - Beginning of morning nautical twilight.
 - End of evening nautical twilight.
 - Sunrise/sunset.
 - Moonrise/moonset.
 - Moon phase.
- Forecast.
- Enemy order of battle:
 - Electronic order of battle:
 - EA/ES capabilities.
 - Meaconing, interference, jamming, and intrusion (MIJI) considerations.
 - Ground-controlled interception capability.
 - Air order of battle.
 - SAM capabilities and locations.
 - AAA capabilities and known locations.
 - Naval order of battle.
 - Enemy capabilities, weaknesses, and likely COAs.
- CSAR/TRAP/survival, evasion, resistance, and escape information:
 - Safe areas:
 - Location.
 - Description.
 - CSAR/TRAP availability/call sign/frequency/location.
 - TRAP launch/divert authority.
 - ISOPREP data.

Friendly Forces

- Ground units (FSCC coordinator):
 - Locations:
 - Forward edge of the battle area/forward line of own troops.
 - NSFS stations and gun-target lines.
 - Artillery batteries and gun-target lines.
 - Other known location of friendly activity.
 - Scheme of maneuver/main effort:
 - Primary and alternate landing zones.
 - Ingress/egress routes.
 - Control points.
 - Escorts.
 - On-call and preplanned CAS in support of—
 - TAC(A)s.
 - ASC(A)s.
 - FAC(A)s.
 - FACs.
 - TACPs.
 - Priority of fires and locations:
 - Naval fire support.
 - Artillery.
 - Aviation.
 - Senior FSCC and location.
 - Communications.
 - Echelon procedures.

- Fire support coordination measures include—
 - Hung ordnance jettison area.
 - ACAs.
 - Fire support coordination line (FSCL).
 - No-fire areas (NFAs).
- Ground terminal controllers.
- Air (TAD/HD):
 - Launch and divert authority:
 - CAS.
 - Assault support.
 - Air defense.
 - Strip alert aircraft:
 - Time/location.
 - Ordnance.
 - Communications.
 - Tanker plan:
 - Tanker tracks.
 - Time-on-station.
 - Giveaway.
 - Helicopters:
 - Requests.
 - FARP locations:
 - Communications.
 - Control procedures.
 - Naval platforms.
 - TAC(A)/ASC(A).
 - UAV employment plan.

Air Defense (Tactical Air Director/Helicopter Director)

- Threat/alert and weapons conditions:
 - Indicators.
 - Tactics.
 - Early warning detection points.
- TAOC location(s)/status.
- Communications with air defense elements/agencies.
- ROE/identification criteria:
 - Routes of flight.
 - Entry/exit points.
- Ground-based air defense (GBAD) units:
 - Missile engagement zones (MEZs).
 - Location of Stinger/Avenger teams.
 - HAWK location(s) and status.
 - Communications.
- High value airborne asset (HVAA) fade and bug out plan:
 - Supporting communications plan.
 - Fade/bug out criteria and authority.
 - Station reset criteria and authority.
 - Visual combat air patrol concerns/coordination.

DASC Status (Crew Chief)

- Communications:
 - Nets:
 - Locations, radio/antenna type, and configuration.
 - Encryption devices available.
 - Hot lines.
 - EMCON/EP procedures.
 - Restoration priorities.

- Communication materials system (CMS) considerations:
 - Authentication codes.
 - Numerical codes.
 - Location.
 - Responsibility.
- Crew functioning:
 - Positions and locations.
 - Relief and casualty procedures.
 - Net responsibilities.
- Reports required and routing:
 - MIJI/frequency interference report.
 - JTAR, JTAR/S, JTEWR, ASR.
 - BDA/MISREP.
 - Intelligence/spot reports.
 - Pilot's reports.
 - MACCS status.
 - DASC equipment status.
 - Joint/multinational forces reports.
 - Information routing procedures.
- Codeword/COMSEC:
 - Mission:
 - Continue.
 - Change.
 - Cancel.
 - Abort.
 - Challenge/reply.
 - Mission specific code words and procedures.

Airspace (Tactical Air Director/Helicopter Director)

- Range available:
 - Altitudes.
 - Airspace restrictions.
 - Ordnance areas/restrictions.
- Airfield operations:
 - Ground-controlled approach facilities.
 - Divert fields.
 - Navigation aids.
 - Frequencies/communications.
 - Fuel and ordnance availability.
 - Emergency recovery procedures.
 - Lost communications procedures.

Summary (Senior Air Director)

- MACCS agencies casualty procedures.
- Additional information germane to operations.
- CASEVAC procedures:
 - Medical team:
 - LFMRCO.
 - Landing force medical regulating control team.
 - Hospital location:
 - Landing zone (LZ) and frequencies.
 - Alternate medical facilities.
 - LZ and frequencies.
 - CASEVAC facility.
- Crew change:
 - Time.
 - Order of relief.

- Procedures.
- Crew debrief:
 - Time.
 - Location.
- Questions.

Crew Change Brief

The order of crew relief is a decision made by the oncoming and offgoing senior air directors. Information exchanged between the offgoing and oncoming crews include, but are not limited to, the following.

Communications Personnel

- Equipment problems experienced during the watch.
- Suspected equipment failures.
- Frequency disparity.
- Status of communication links.
- Cryptographic device software changeovers.

Plotters

- Fixed-wing aircraft currently airborne and their location.
- Rotary-wing aircraft currently airborne and their location.
- Current numbering for JTAR, JTAR/S, JTEWR, ASR, and CASEVAC forms.
- Active ACAs and MEZs.
- Location of FOBs.
- Location of UAVs.
- Scheduled major helicopter lifts.
- Updates/changes to the scheme of maneuver.
- Active artillery positions.

Fire Support/Safety Net Operators

- Recent changes to fire support coordination measures.
- Location of NSFS/artillery units.
- Active ACAs.
- Latest information on enemy location(s).
- Location of GBAD units.
- Free fire areas/ordnance jettison areas.

Tactical Air Traffic Control Net Operator (As Required)

- Missions, which are airborne, on alert status, late for launch or time on target, etc.
- Changes to RIO sequence/information passed.
- Changes to air control procedures.
- Safety of flight issues.
- Location(s) of UAVs.
- Active ACAs.

Tactical Air Director

- Status of ongoing events (e.g., airborne, on alert, late RIO).
- Status of preplanned/immediate missions.
- Status of diverted aircraft (if applicable).
- Call signs of terminal controllers and which controller (s) are working airborne aircraft.
- Pending BDAs.
- Location of TAC(A)s and FAC(A)s.
- Next JTAR, JTAR/S, JTEWR number.
- Air defense warning and weapons release conditions.
- Safety of flight information.
- UAV locations.

- Pending nine-line briefs.
- Fire support coordination measures in effect.

Helicopter Director

- Status of aircraft airborne, on alert, and diverted.
- Status of preplanned/immediate missions.
- Status of ongoing /CASEVACs.
- Status of ongoing ASRs.
- Location(s) of ASC(A), FAC(A), and/or airborne mission commander (if applicable).
- Changes to routing procedures.
- Locations of aircraft in LZs.
- Location of CSAR/TRAP/CASEVAC package(s).
- Air defense warning condition and weapons release status.

Tactical Air Command Net Operator

- Air defense warning condition and weapons release status.
- Expected responses to late mission queries.
- Ongoing significant events.
- Weather status.

Direct Air Support Net Operator

- Air defense warning condition and weapons release status.
- Pending responses from the TACC (e.g., launches).
- Latest BDA passed to the TACC.
- Friendly positions.
- Changes to enemy locations.
- Current weather information.

Tactical Air Request/Helicopter Request Net Operators

- Next JTAR, JTAR/S, JTEWR, ASR, and CASEVAC numbers to be assigned.
- Status of current JTARs, JTAR/Ss, JTEWRs, ASRs, and CASEVAC requests.
- Expected BDAs to receive or mission status to pass.
- Units not answering on net including station call signs.
- Status of troop lifts.
- Status of incomplete requests for mission information.

Crew Chief

- Pertinent information regarding DASC crewmembers.
- Status of ongoing missions.
- Changes and updates in fire support coordination measures.
- Communications support/equipment status.
- Changes of radios/nets/positions due to equipment problems.
- Significant events.
- Outstanding JTARs, JTAR/Ss, JTEWRs.
- Outstanding ASRs.
- Outstanding CASEVAC requests.
- Changes/updates available from intelligence representatives.

Senior Air Director

- Communications support/equipment status.
- ATO information.
- Aircraft significantly late to radio in or radio out.
- Aircraft assignments for upcoming missions (e.g., diverted, strip alert).
- Pending immediate requests for support.
- Changes to scheme of maneuver.

- Changes to priority of fires.
- MIJI incidences reported.
- Downed/distressed aircraft.
- Any significant past, present or future events that could impact on operations.
- Status of diverted aircraft.
- Availability of strip alert aircraft.
- Current CASEVAC procedures.

Post Watch Debrief

The post watch debrief contains elements from each significant event that occurred during the watch. The debrief serves as an important learning tool for all crewmembers. For maximum benefit, a constructive critique of each crewmember's performance should be included. Significant events discussed include the following:

- Information flow internal and external to the DASC.
- Control procedures.
- Position information problems, recommended remedies, etc.
- Use of forms within the DASC.
- Effectiveness and proper use of radio/transmission procedures.
- Reviewing the amount of radio traffic for possible consolidation on future watches/operations.
- Other items deemed necessary by the crew.

Appendix B Training

Every Marine Corps leader has the responsibility to establish and conduct technical and tactical training for Marines to successfully accomplish the unit's mission. The tools available to assist leaders in establishing the base for an effective training plan are relevance, standardization, efficiency, and specificity. Due to the complexities of amphibious, joint, and multinational operations, the importance of individual-, crew-, and unit-level training for DASC controllers and operators cannot be understated. The impact from meaningful, quality training reflects on a Marine's proficiency.

Individual Training

DASC controller and operator training requirements are standardized by MCO P3500.19B, *Training and Readiness (T&R) Manual, Volume V, Marine Air Command and Control System (MACCS)*. It specifies training events and position requirements necessary for controllers and operators to progress through various level qualifications. Follow-on formal training is available to those Marines who demonstrate military occupational specialty (MOS) proficiency.

Formal Schools

Entry-Level Training

Entry-level training for DASC controllers and operators is conducted at Air School, Marine Corps Communication-Electronics School, Marine Corps Air-Ground Combat Center, Twentynine Palms, CA.

Air Support Control Officer Course

The Air Support Control Officer Course (ASCOC) provides instruction regarding DASC system capabilities, employment, crew operations, and system configuration. The ASCOC provides students with a thorough knowledge of air support, assault support, and techniques of direct air support employment in the operating force and Fleet Marine Force (FMF). Students receive specific instruction on the following:

- Procedural control of aircraft.
- Functions and roles of various DASC crewmembers.
- EW.
- Nuclear, biological, and chemical (NBC) defense in the DASC.

Air Support Operations Operator Course

The Air Support Operations Operator Course (ASOOC) provides training for enlisted Marines in the DASC's operations. Course content includes the following:

- Operation and employment of DASC equipment.
- EW.
- NBC defense in the DASC.
- DASC crew training.

Graduate-Level Training

Air support officers (MOS 7208) exhibiting requisite technical and tactical proficiency may be selected by their commands to attend the Weapons and Tactics Instructor (WTI) Course. WTI provides students advanced training and practical application on planning, integration, and execution of the six functions of

Marine aviation. MOS 7208 students receive specific instruction in the following areas:

- MACCS.
- Air support planning considerations.
- DASC operational execution.

Prerequisites for WTI attendance include SAD qualification with MEB exercise/operation experience. Upon completion, students receive the MOS 7277 (WTI) designation.

A similar program, the Weapons and Tactics Crew Chief Instructor (WTCCI) Course, is available for DASC crew chiefs. The WTCCI Course addresses the same basic curriculum as the 7208 course, but the practical application is geared toward the DASC crew chief. Prerequisites include qualification as a crew chief and experience in a MEB exercise/operation.

Follow-on Schools

Additional formal schools are available for field grade officers including the WTI Commanders Course and WTI Refresher Course. Held at Marine Corps Air Station, Yuma, AZ, the WTI Commanders Course provides field grade officers with an opportunity to examine and discuss issues affecting the MACCS and considerations for MACCS employment. The WTI Refresher Course is conducted for WTIs who have been out of the FMF or serving in a non-DASC-related billet. The course is designed to update the WTI on current and evolving weapons, tactics, and threat information.

Other Schools

Other courses of instruction applicable to DASC operator proficiency are available from the expeditionary warfare training group (EWTG). Instruction from EWTG may be conducted at the schoolhouse or from onsite mobile training teams. EWTG periodically provides a list of available courses.

On-the-Job Training

Most DASC controller and operator MOS training is conducted at the squadron level. Requirements for both academic and practical application training and position qualification for DASC controllers and operators are specified in MCO P3500.19B. A specific T&R syllabus exists for MOS 7208 controllers and MOS 7242 operators. Tracking of individual readiness is computed by the aviation T&R information management system (ATRIMS). DASC controller and operator training are conducted at four progressive levels. Completion of each level equates to reaching a given combat readiness percentage (CRP). An outline of the phases, position qualifications reached, and corresponding individual CRP is outlined below.

Combat Capable Training

A Marine with this rating has a basic proficiency in air support operations and has a CRP of 60 percent. MOS 7208 controllers will be TAD and HD capable; MOS 7242 operators will be a capable net operator. Currently, this rating is a prerequisite for graduation from the ASCOC and ASOOC.

Combat Ready Training

This level of training constitutes a 75 percent CRP. MOS 7208 controllers will be a qualified HD and TAD; MOS 7242 Marines will be qualified net operators.

Combat Qualification Training

Personnel at this level of proficiency will have a 95 percent CRP and be combat qualified. MOS 7208 officers will attain MEB SAD qualification; MOS 7242 operators will be a qualified MEB crew chief.

Full Combat Qualification Training

The full combat qualified Marine is qualified as a MEF-level SAD (in the case of MOS 7208) or crew chief (in the case of MOS 7242) and is well versed in MACCS, MAGTF, and joint/multinational service operations. These individuals have attained a 100 percent CRP.

Special Qualifications

The instructor-under-training syllabus is designed to develop proficiency in instructional procedures and techniques. At the completion of this training, the individual should be capable of describing/demonstrating the training objectives of the syllabus. Instructor training is oriented toward the functional areas of either air support control instructor or threat tactics instructor. Students must complete the appropriate courses and be certified by a qualified DASC WTI. Once certified, the individual will be designated by the commanding officer in writing.

Crew Training

The DASC crew is the key to effective and efficient air support control. The MASS trains DASC crews through live exercises, command post exercises (CPXs), and DASC drills. The DASC drill consists of a DASC crew and a simulator cell. The simulator cell is usually a mirror image of the DASC crew and is staffed by more experienced personnel who execute the scenario as the FSC, aircrews, TACC, TACPs, etc., and assist in evaluating the performance of the DASC crewmembers. In addition, one or more experienced MOS 72XXs observe from inside the DASC to objectively evaluate the performance of the crewmembers and the crew coordination. The DASC drill and post-drill debrief are essential to build fundamental skills and crew coordination.

Unit Training

Unit training involves that training required to prepare the MASS to perform its mission. Unit training can take on many forms including CPXs and field training exercises (FTXs). During unit training, MASS personnel are intimately involved in preparing training plans and coordinating with higher, adjacent, and subordinate C2 and support elements.

Marine Aviation Planning Problem Exercises

Marine aviation planning problem (MAPP) exercises are low cost, low overhead training that allow commanders to train their staffs to perform special integration and control functions in a simulated environment. MAPP exercises are particularly effective for determining C2 requirements to support possible contingencies.

MACCS Integrated Simulation Training Exercise

The MACCS integrated simulation training exercise (MISTEX) is a MACG locally-produced exercise that involves detailed preparation of a simulated scenario and its subsequent execution at the MACCS level. The MISTEX can serve to prepare units for upcoming FTXs or contingencies. Individual Marine participation in filling a crew position during a MISTEX is a T&R requirement for position qualification.

Joint System Training Exercise

The joint system training exercise (JSTE) provides an integrated systems training that incorporates the challenge of integrating the MACCS in joint operations. JSTE scenarios have been developed to support joint C2 training for probable contingency operations worldwide.

Other Unit Training

In addition to CPX and simulated exercise type training, the DASC often deploys to the field to participate in FTXs.

Training Evaluation

The success of individual, crew, and unit training must be qualitatively measured to identify training deficiencies and create a baseline for designing future training. Evaluation tools to identify training deficiencies are MCO 3501.9B and MCO P3500.19B. The MCCRES is a standardized, Headquarters Marine Corps-directed evaluation program designed to measure a unit's warfighting readiness. It specifies mission performance standards that agencies are expected to perform during their wartime mission. MCO P3500.19B specifies individual performance standards.

Appendix C

Glossary

Section I. Acronyms and Abbreviations

AAA	.....	antiaircraft artillery
AAW	.....	antiair warfare
ACA	.....	airspace control authority
ACE	.....	aviation combat element
AF	.....	amphibious force
AM	.....	amplitude modulation
ANGLICO	.....	air/naval gunfire liaison company
AO	.....	area of operations
AOA	.....	amphibious objective area
AOC	.....	air operations center
ASC	.....	air support coordinator
ASC(A)	.....	assault support coordinator (airborne)
ASCOC	.....	air support control officer course
ASE	.....	air support element
ASLT	.....	air support liaison team
ASNO	.....	air support net operator
ASOC	.....	air support operations center
ASOOC	.....	air support operations operator course
ASR	.....	assault support request
ATC	.....	air traffic control
ATF	.....	amphibious task force
ATO	.....	air tasking order
ATRIMS	.....	aviation training and readiness information management system

BDA.....battle damage assessment

C2.....command and control

C2W.....command and control warfare

CAC2S.....common aviation command and control system

CAS.....close air support

CASC.....communications air support central

CASEVAC.....casualty evacuation

CDS.....communications distribution system

C-E.....communications-electronics

CMS.....communication materials system

COA.....course of action

COMM.....communications

COMSEC.....communications security

CP.....control point

CPX.....command post exercise

CRP.....combat readiness percentage

CSAR.....combat search and rescue

CTT.....commanders tactical terminal

CWAR.....continuous wave acquisition radar

DAS.....deep air support

DASC.....direct air support center (MACCS agency)

DASC(A).....DASC (airborne)

EA.....electronic attack

ELINT.....electronic intelligence

EMCON.....emission control

EOB.....enemy order of battle

EP.....electronic protection

ES.....electronic warfare support

EW.....electronic warfare

EWTG.....expeditionary warfare training group

FAC	forward air controller
FAC(A)	forward air controller (airborne)
FARP	forward arming and refueling point
FFCC	force fires coordination center
FM	frequency modulation
FMF	Fleet Marine Force
FMFM	Fleet Marine Force manual
FOB	forward operating base
FSC	fire support coordinator
FSCC	fire support coordination center
FTX	field training exercise
G-2	intelligence staff officer/organization
GBAD	ground-based air defense
GCA	ground-controlled approach
GCE	ground combat element
GCS	ground control station
HD	helicopter director
HDC	helicopter direction center
HE	high explosive
HF	high frequency
HMD	high mobility downsized
HMMWV	high mobility, multipurpose wheeled vehicle
HVAA	high value airborne asset
ISOPREP	isolated personnel report
JSTE	joint system training exercise
JTAR	joint tactical air strike request
JTAR/S	joint tactical air reconnaissance and surveillance
JTEWR	joint tactical electronic warfare request

KBkilobyte

LAN..... local area network

LFlanding force

LFMRCO..... landing force medical regulating control officer

LOSline of sight

LZ landing zone

MACCS.....Marine air command and control system

MACG..... Marine air control group

MAGTF..... Marine air-ground task force

MAPPMarine aviation planning problem

MASS Marine air support squadron

MCCRES.....Marine Corps Combat Readiness
Evaluation System

MCHS Marine Corps common hardware suite

MCO Marine Corps order

MCWP.....Marine Corps warfighting publication

MEB Marine expeditionary brigade

MEF..... Marine expeditionary force

MEU Marine expeditionary unit

MEZ..... missile engagement zone

MIJI..... meaconing, interference, jamming, and intrusion

MISREP.....mission report

MISTEX..... MACCS integrated simulation training exercise

MLG Marine liaison group

MOSmilitary occupational specialty

MRC mobile radio communication

MRR minimum-risk route

MRTmedical regulating team

NATO	North Atlantic Treaty Organization
NAU	network access unit
NBC	nuclear, biological, and chemical
NSFS	naval surface fire support
NWP	naval warfare publication
OAS	offensive air support
OIC	officer in charge
OPS	operations
RAOC	rear area operations center
RFI	request for information
ROE	rules of engagement
RTF	return to force
S-2	intelligence staff officer/organization
S-6	communications and information systems officer
SACC	supporting arms coordination center
SAD	senior air director
SAM	surface-to-air missile
SNCOIC	staff noncommissioned officer in charge
SWO	senior watch officer
T&R	training and readiness
TAC(A)	tactical air coordinator (airborne)
TACC	tactical air command center (USMC); tactical air control center (USN)
TACP	tactical air control party
TAD	tactical air director
TADC	tactical air direction center
TAOC	tactical air operations center
TRAP	tactical recovery of aircraft and personnel

UAVunmanned aerial vehicle
UCD..... user control device
UHF..... ultrahigh frequency
UNAAF..... United Action Armed Forces

VHF..... very high frequency

WEZweapon engagement zone
WTCCI weapons and tactics crew chief instructor
WTI weapons and tactics instructor

Section II. Definitions

air support element—An element task organized by the Marine air support squadron to perform various air support control functions. Employment options can range from MEU level operations characterized by limited assets and endurance, to a multi-division operation where the ASE is almost if not identical in capability but set apart in responsibilities and subordinate to the DASC. The air support element can function as an extension of the Navy tactical air control center/helicopter direction center, in conjunction with the battalion tactical air control party. (Proposed for inclusion in MCRP 5-12C)

air support liaison team—A team task-organized by the Marine air support squadron to maintain liaison between the direct air support center (DASC) and the fire support coordination center (FSCC). The air support liaison team is not a DASC, but may augment an echelon capability during displacement of the DASC. An air support liaison team may be used to provide a team to the senior FSCC when the DASC is not able to physically collocate with the FSCC because of mobility or communications requirements with other agencies and supporting aircraft. Also called ASLT. (MCRP 5-12C)

amphibious force—An amphibious task force and a landing force together with other forces that are trained, organized, and equipped for amphibious operations. Also called AF. (JP 3-02)

area of operations—An operational area defined by the joint force commander for land and naval forces. Areas of operation do not typically encompass the entire operational area of the joint force commander, but should be large enough for component commanders to accomplish their missions and protect their forces. Also called AO. (JP 1-02)

area of responsibility—The geographical area associated with a combatant command within which a combatant commander has authority to plan and conduct operations. Also called AOR. (JP 1-02)

casualty evacuation—The movement of the sick, wounded, or injured. It begins at the point of injury or the onset of disease. It includes movement both to and between medical treatment facilities. All units have an evacuation capability. Any vehicle may be used to evacuate casualties. If a medical vehicle is not used it should be replaced with one at the first opportunity. Similarly, aeromedical evacuation should replace surface evacuation at the first opportunity. (MCRP 5-12C)

close air support—Air action by fixed- and rotary-wing aircraft against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces. Also called CAS. (JP 1-02)

combined arms—The full integration of combat arms in such a way that to counteract one, the enemy must become more vulnerable to another. (MCRP 5-12C)

commander, amphibious task force—The Navy officer designated in the order initiating the amphibious operation as the commander of the amphibious task force. Also called CATF. (JP 3-02)

commander, landing force—The officer designated in the order initiating the amphibious operation as the commander of the landing force for an amphibious operation. Also called CLF. (JP 3-02)

deep air support—Air action against enemy targets at such a distance from friendly forces that detailed integration of each mission with fire and movement of friendly forces is not required. Deep air support missions are flown on either side of the fire support coordination line; the lack of a requirement for close coordination with the fire and movement of friendly forces is the qualifying factor. Also called DAS. (MCRP 5-12C)

direct air support—Air support flown in direct response to a specific request from the supported unit. (MCRP 5-12C)

direct air support center—The principal air control agency of the U.S. Marine air command and control system responsible for the direction and control of air operations directly supporting the ground combat element. It processes and coordinates requests for immediate air support and coordinates air missions requiring integration with ground forces and other supporting arms. It normally collocates with the senior fire support coordination center within the ground combat element and is subordinate to the tactical air command center. Also called DASC. (JP 1-02)

direct air support center (airborne)—An airborne aircraft equipped with the necessary staff personnel, communications, and operations facilities to function as a direct air support center. Also called DASC(A). (JP 1-02)

emission control—The selective and controlled use of electromagnetic, acoustic, or other emitters to optimize command and control capabilities while minimizing, for operations security (OPSEC): **a.** detection by enemy sensors; **b.** mutual interference among friendly systems; and/or **c.** enemy interference with the ability to execute a military deception plan. Also called EMCON. (JP 1-02)

fire support coordination center—A single location in which are centralized communications facilities and personnel incident to the coordination of all forms of fire support. Also called FSCC. (JP 1-02)

fire support coordination line—A fire support coordinating measure that is established and adjusted by appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Fire support coordination lines (FSCLs) facilitate the expeditious attack of surface targets of opportunity beyond the coordinating measure. An FSCL does not divide an area of operations by defining a boundary between close and deep operations or a zone for close air support. The FSCL applies to all fires of air, land, and sea-based weapon systems using any type of ammunition. Forces attacking targets beyond an FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide. Supporting elements attacking targets beyond the FSCL must ensure that the attack will not produce adverse effects on, or to the rear of, the line. Short of an FSCL, all air-to-ground and surface-to-surface attack operations are controlled by the appropriate land or amphibious force commander. The FSCL should follow well defined terrain features. Coordination of attacks beyond the FSCL is especially critical to commanders of air, land, and special operations forces. In exceptional circumstances, the inability to conduct this coordination will not preclude the attack of targets beyond the FSCL. However, failure to do so may increase the risk of fratricide and could waste limited resources. Also called FSCL. (JP 1-02)

helicopter direction center—In amphibious operations, the primary direct control agency for the helicopter group/unit commander operating under the overall control of the tactical air control center. (Joint Pub 1-02) The helicopter direction center is

an agency within the Navy tactical air control system and is positioned afloat. The helicopter direction center is not a Marine air command and control system agency, but it interacts closely with the direct air support center in the control of helicopter operations between ship and shore. The helicopter direction center also interacts closely with the air support element of the Marine expeditionary unit aviation combat element. Also called HDC. (MCRP 5-12C)

MESHnet—A communications distribution system that allows an operator to interface with radios, telephones, intercom, and computer networks.

offensive air support—Those air operations conducted against enemy installations, facilities, and personnel to directly assist the attainment of MAGTF objectives by the destruction of enemy resources or the isolation of the enemy's military forces. Also called OAS. (MCRP 5-12C)

positive control—**1.** A method of airspace control which relies on positive identification, tracking, and direction of aircraft within an airspace, conducted with electronic means by an agency having the authority and responsibility therein. (JP 1-02)
2. The tactical control of aircraft by a designated control unit, whereby the aircraft receives orders affecting its movements which immediately transfer responsibility for the safe navigation of the aircraft to the unit issuing such orders. (MCRP 5-12C under "Marine air command and control system")

procedural control—A method of airspace control which relies on a combination of previously agreed and promulgated orders and procedures. (JP 1-02)

rules of engagement—Directives issued by competent military authority which delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered. Also called ROE. (JP 1-02)

sector—An area designated by boundaries within which a unit operates, and for which it is responsible. (JP 1-02, Part 1 of a 2-part definition)

supporting arms coordination center—A single location on board an amphibious command ship in which all communication facilities incident to the coordination of fire support of the artillery, air, and naval gunfire are centralized. This is the naval counterpart to the fire support coordination center utilized by the landing force. Also called SACC. (JP 1-02)

suppression of enemy air defenses—That activity which neutralizes, destroys, or temporarily degrades surface-based enemy air defenses by destructive and/or disruptive means. Also called SEAD. (JP 1-02)

tactical air command center—The principal U.S. Marine Corps air command and control agency from which air operations and air defense warning functions are directed. It is the senior agency of the Marine air command and control system which serves as the operational command post of the aviation combat element commander. It provides the facility from which the aviation combat element commander and his battle staff plan, supervise, coordinate, and execute all current and future air operations in support of the Marine air-ground task force. The tactical air command center can provide integration, coordination, and direction of joint and combined air operations. Also called Marine TACC. (JP 1-02)

tactical air control center—The principal air operations installation (ship-based) from which all aircraft and air warning functions of tactical air operations are controlled. Also called Navy TACC. (JP 1-02)

tactical air direction center—An air operations installation under the overall control of the tactical air control center (afloat)/tactical air command center, from which aircraft and air warning service functions of tactical air operations in an area of concern are directed. Also called TADC. (JP 1-02)

tactical air operations center—The principal air control agency of the U.S. Marine air command and control system responsible for airspace control and management. It provides real time surveillance, direction, positive control, and navigational assistance for friendly aircraft. It performs real time direction and control of all anti-air warfare operations, to include manned interceptors and surface-to-air weapons. It is subordinate to the tactical air command center. Also called TAOC. (JP 1-02)

terminal control—The authority to direct the maneuver of aircraft which are delivering ordnance, passengers, or cargo to a specific location or target. Terminal control is a type of air control. (JP 1-02)

unmanned aerial vehicle—A powered, aerial vehicle that does not carry a human operator, uses aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely, can be expendable or recoverable, and can carry a lethal or nonlethal payload. Ballistic or semiballistic vehicles, cruise missiles, and artillery projectiles are not considered unmanned aerial vehicles. Also called UAV. (JP 1-02)

Appendix D

References and Related Publications

Joint Publications (JPs)

0-2	Unified Action Armed Forces (UNAAF)
1-02	Department of Defense Dictionary of Military and Associated Terms
3-0	Doctrine for Joint Operations
3-02	Joint Doctrine for Amphibious Operations
3-02.1	Joint Doctrine for Landing Force Operations Doctrine for Joint Fire Support
3-52	Doctrine for Joint Airspace Control in the Combat Zone
3-54	Joint Doctrine for Operations Security
3-55.1	Joint Tactics, Techniques, and Procedures for Unmanned Aerial Vehicles
3-56.1	Command and Control for Joint Air Operations

Naval Warfare Publication (NWP)

3-09/FMFM 1-7 Supporting Arms in Amphibious Operations

Navy and Marine Corps White Paper

...From the Sea

Marine Corps Doctrinal Publications (MCDPs)

- 1 Warfighting
- 6 Command and Control

Marine Corps Warfighting Publications (MCWPs)

- 3-2 Aviation Operations
- 3-22 Antiair Warfare
- 3-22.2 Suppression of Enemy Air Defenses
- 3-23 Offensive Air Support
- 3-23.1 Close Air Support
- 3-23.2 Deep Air Support
- 3-24 Assault Support
- 3-25 Control of Aircraft and Missiles
- 3-25.2 Theater Air-Ground Systems
- 3-26 Air Reconnaissance
- 4-11.1 Health Service Support Operations
- 5-11.1 MAGTF Aviation Planning

Marine Corps Reference Publications (MCRPs)

- 3-25D Integrated Combat Airspace Command and Control
- 5-12C Marine Corps Supplement to the DOD Dictionary of Military and Associated Terms

Marine Corps Orders (MCOs)

- P3500.19B Aviation Training and Readiness Manual,
Volume V, Marine Air and Control System
(Short Title: T&R Manual)
- 3501.9B Marine Corps Combat Readiness Evaluation
System (Short Title: [MCCRES], Volume VIII,
The Marine Air Command and Control System
[MACCS])

Air Force Publication

- 3-1 (S) Air Force Tactics, Techniques, and Procedures